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Two New *Pidonia* (Coleoptera, Cerambycidae) from the
Cool-temperate Forest of Mt. Tai-ping Shan,
Northeastern Taiwan

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Abstract Two new species of the lepturine genus *Pidonia* are described from Taiwan. Both belong to the subgenus *Cryptopidonia*; one of them, named *P. (C.) chiaomui*, is related to *P. takahashii*, while the other, named *P. (C.) taipingshana*, to *P. pilushana*. Furthermore, the difference in distributional patterns among related species is discussed from the viewpoint of vertical distributional zonation.

Key words: Cerambycidae; *Pidonia*; new species; vertical distribution; Taiwan.

The species of the genus *Pidonia* occur mainly in the temperate zone of the Holarctic Region, and more than 100 species have been known to belong to this genus. The Island of Taiwan is the southern periphery of the distributional range of the genus *Pidonia*. Up to the present 28 species, which are divided into 3 subgenus have been recorded from Taiwan.

The subgenus *Cryptopidonia* shows a very limited distribution in Japan, Taiwan and southeastern China. The present paper contains the result of my study on the species of the subgenus *Cryptopidonia* obtained on the cool-temperate forest of Mt. Tai-ping Shan, about 1,900 m alt., I-lan Hsien, northeastern Taiwan. Two species are new to science and will be named *Pidonia chiaomui* and *P. taipingshana*. The holotypes of the new species to be described below will be deposited in the collection of the National Museum of Natural Science, Tai-chung, Taiwan.

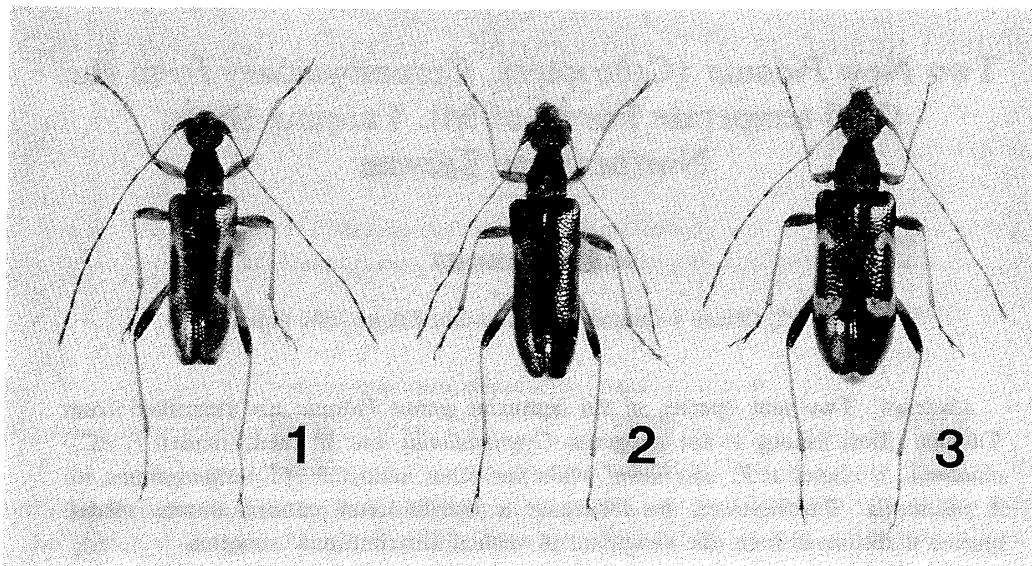
The distributional ranges of two new species are clarified respectively and the difference in distributional patterns among related species is discussed from the viewpoint of vertical vegetational zonation.

In preparing this report, I wish to express my hearty thanks to Dr. Chiao-Mu HSU for his kind help during my collecting trip in Taiwan. My thanks are also due to Mr. Kazutoshi SUZUKI who gave me the opportunity to work with this interesting material.

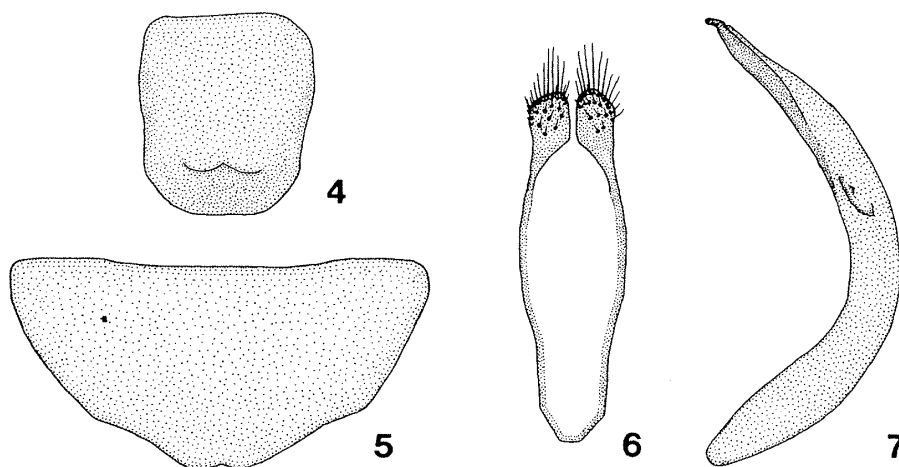
Pidonia (Cryptopidonia) chiaomui KUBOKI, sp. nov.

(Figs. 1–8)

Body small, relatively roundish, slightly tapering apically (male) or more



Figs. 1-3. *Pidonia (Cryptopidonia) chioamui* KUBOKI, sp. nov., from Mt. Tai-ping Shan in northeastern Taiwan. — 1, 2, ♂; 3, ♀.



Figs. 4-7. *Pidonia (Cryptopidonia) chioamui* KUBOKI, sp. nov., ♂. — 4, Last tergite; 5, last sternite; 6, lateral lobes of male genitalia, ventral view; 7, median lobe of the same, lateral view. Scale: 0.3 mm.

robust (female) and furnished with pale fulvous pubescence.

Length: 6.8–5.7 mm (male), 7.5–7.1 mm (female); breadth: 1.9–1.6 mm (male), 2.2–2.1 mm (female).

Color. Male: — Body reddish yellow to black; head black, sometimes antennal supports brown; sometimes entirely darkened; mouthparts fulvous except for reddish brown apex of each mandible; eyes black; antennae yellowish brown to black; 1st to 5th segments yellowish brown; 5th to 11th segments infusate at their apices; prothorax black; scutellum black; coxae and trochanters

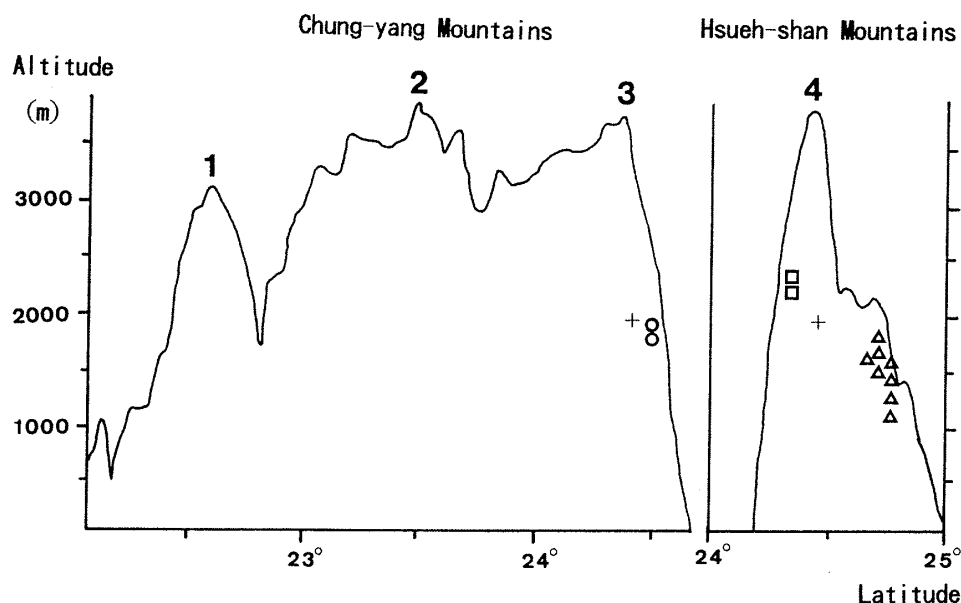


Fig. 8. Vertical distribution of *Pidonia chiaomui* and relatives, *P. takahashii* and *P. fushani* in Taiwan. Triangles: *P. takahashii* KUBOKI. Circles: *P. chiaomui* KUBOKI, sp. nov. Tetragons: *P. fushani* KUBOKI. — 1, Mt. Pei-ta-wu Shan; 2, Mt. Yu Shan; 3, Mt. Nan-hu-ta Shan; 4, Mt. Hsueh Shan. Cross marks indicates the location of Si-yuan-ya-kou, on the borders between the Chung-yang Mountains and the Hsueh-shan Mountains.

fulvous; femora fulvous; each apex of mid and hind femora dark brown to black; tibiae fulvous; tarsi dark brown to black; claws reddish brown. Elytra yellowish fulvous with black markings; the black portions inclined to dull submetallic blue. Ventral surface: head fulvous, sometimes temples black; thorax fulvous, sometimes black; meso- and metasterna darkened, sometimes black; abdomen fulvous, each of first to second or third sternites black. Elytral markings: sutural marking large, broadened basally, gradually narrowed apically; basal marking lacking; latero-basal marking small; latero-median marking distinctly well developed, oblong; latero-posterior marking lacking; apical band narrowly present.

Female: — Body coloration and markings distinctly developed in female than in male; head, thorax and scutellum black; elytra black inclining to dull metallic blue with two pairs of arcuate whitish yellow markings; 1st and 2nd antennal segments yellowish brown; 3rd and following segments infusate; coxae and trochanters brownish yellow; femora and tibiae almost brownish yellow, sometimes infusate at their apices; tarsi and claws dark brown; ventral surface: head and thorax black; abdomen reddish brown; each of first to second sternites darkened to black.

Structure. Head broader across eyes than basal width of prothorax (male, 1.14:1; female, 1.03:1); terminal segment of maxillary palpus broadened apically with straight outer margin; temples narrowed posteriorly in anterior half

and abruptly constricted in posterior half, almost impunctate and shining, with several setae; frons subvertical and transverse, covered with coarse punctures, bearing a fine but distinct median longitudinal furrow extending backwards to vertex; vertex weakly convex above, coarsely punctured; gula shining, very sparsely clothed with long pubescence. Eyes relatively prominent, moderately faceted, shallowly emarginate at middle of internal margins. Antennae relatively short and slender, inserted just behind the level across frontal margins of eyes, slightly longer (male) or distinctly shorter (female) than body; first segment distinctly dilated towards apex, weakly shining, sparsely clothed with fine pubescence, second to eleventh segments densely clothed with fine appressed pubescence and sparsely with fine erect pubescence; comparative length of each antennal segment as follow: — $5 > 1 + 2 > 3 > 4 = 6$ (male) or $5 > 1 + 2 > 3 > 4 \geq 6$ (female).

Prothorax longer than basal width (male, 1.13 : 1; female, 1.12 : 1), shallowly constricted both behind apex and before base and roundly expanded laterally just before the middle; breadth across expanded portions slightly shorter than base; basal margin weakly bisinuate, obviously broader than apical margin (male, 1.32 : 1; female, 1.37 : 1); disk of pronotum convex above, finely and closely punctate and sparsely clothed with fine pubescence; posterior lateral setae long; prosternum shining, extremely thinly clothed with short pubescence; meso- and metasterna finely punctate, densely clothed with fine appressed pubescence. Scutellum small and triangular, slightly longer than broad and bearing thin pubescence on the surface. Elytra 2.33 times (male) or 2.26 times (female) as long as basal width, gradually narrowed posteriorly (male) or almost parallel-sided (female) and separately rounded at apices; surface sparsely and finely punctate sparsely clothed with suberect pubescence; interspace between punctures broader than diameter of each puncture.

Legs relatively slender, finely punctate and clothed with short pubescence; femora clavate, with subappressed pubescence; hind femora not reaching elytral apex in both sexes; tibiae linear, with suberect pubescence; tarsi densely clothed with short pubescence on under surface; first segment of metatarsus longer than the following two taken together; third segment strongly dilated apically and deeply emarginate at middle of apex.

Abdomen elongate and gradually narrowed towards apex; surface of each sternite densely covered with extremely fine pubescence; in male, apex of last sternite round and very shallowly emarginate at middle (Fig. 5), apex of last tergite truncate (Fig. 4); in female, apex of last sternite round, apex of last tergite truncate.

Male genitalia: — Median lobe long, relatively slender, gradually sclerotized towards apex, strongly curved at middle and acutely pointed at apex (Fig. 7); ventral plate of median lobe weakly bending inward at apex; lateral lobes shorter

kawakamii and *Juniperus squamata*. Those continue up to the upper alpine desert zone. The piedmont zone in Taiwan is similar to that of Japan. On the other hand, the higher zones including the montane zone resemble those in the central and eastern Himalayas (NUMATA, 1966).

Fagus hayatae is a glacial relict and has a very restricted distribution area in Taiwan. The *Fagus hayatae* forest which is the cool-temperate forest is restricted to Mt. Pei-cha-tien Shan (1,727 m in height) and Mt. La-la Shan (2,030 m in height), northern end of the Hsueh-shan Mountain Range and Mt. San-hsing Shan, northern end of the Chung-yang Mountain Range.

The distribution of *Pidonia chiaomui* and its relatives, *P. takahashii* and *P. fushani* is shown in Fig. 8. *P. takahashii* is distributed in the northern part of the Hsueh-shan Mountain Range. Vertically, it occupies an area from the upper evergreen broad-leaved forest to the montane evergreen needle-leaved forest zones. According to my investigation made at Mt. Pei-cha-tien Shan (1,727 m in height), on the borders between Tai-pei Hsien and Tao-yuan Hsien, *P. takahashii* is vertically distributed from 1,050 m to 1,720 m in altitude. It inhabits the *Fagus hayatae* forest and is one of the most dominant species in this area. *Pidonia fushani*, whose range is restricted to the southern part of the Hsueh-shan Mountain Range, vertically occupies the montane evergreen needle-leaved forest zone. At Mt. An-ma Shan (2,665 m in height), Tai-chung Hsien, *P. fushani* is vertically distributed from 2,200 m to 2,300 m in altitude (KUBOKI, 1993a). *P. chiaomui* is distributed in the northern end of the Chung-yang Mountain Range. It vertically occupies the cool-temperate forest. At Mt. Tai-ping Shan (1,950 m in height) and Mt. San-hsing Shan, I-lan Hsien, *P. chiaomui* is vertically distributed from 1,800 m to 1,900 m in altitude (KUBOKI, 1994).

Three species of *Pidonia takahashii*, *P. fushani* and *P. chiaomui* form a species-group of the subgenus *Cryptopidonia*, mainly characterized by the following combination of morphological features: antennae more and less short; ventral surface of head almost fulvous except for temples; ventral surface of abdomen almost reddish yellowish in female; median lobe of male genitalia slender, strongly curved at middle; ventral plate of median lobe weakly bending inward at apex; stylus of female genitalia relatively large and broad. This species-group of Taiwan may be related to the group of *P. miwai*, *P. approximata* and *P. lyra* mainly occurring in the *Fagus* forest of the Japanese Islands.

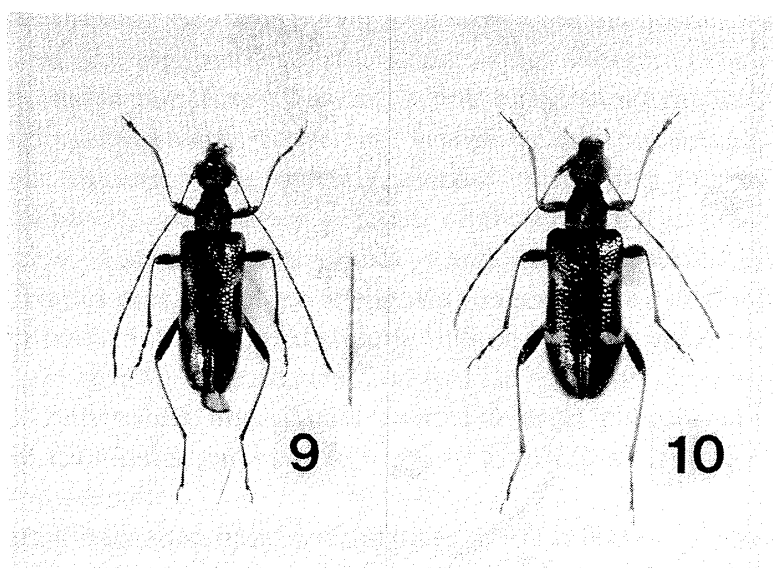
The distributional ranges of three closely related species are separated by the chain of mountain peaks and deep valleys in Taiwan. For instance, Mt. Ta-pa-chien Shan (3,573 m in height) and Mt. Hsueh Shan (3,884 m in height) are situated between the distributional ranges of *P. takahashii* and *P. fushani*. The differentiation of three related species may arise after geographic separation as part of the speciation process.

Pidonia (*Cryptopidonia*) *taipingshana* KUBOKI, sp. nov.

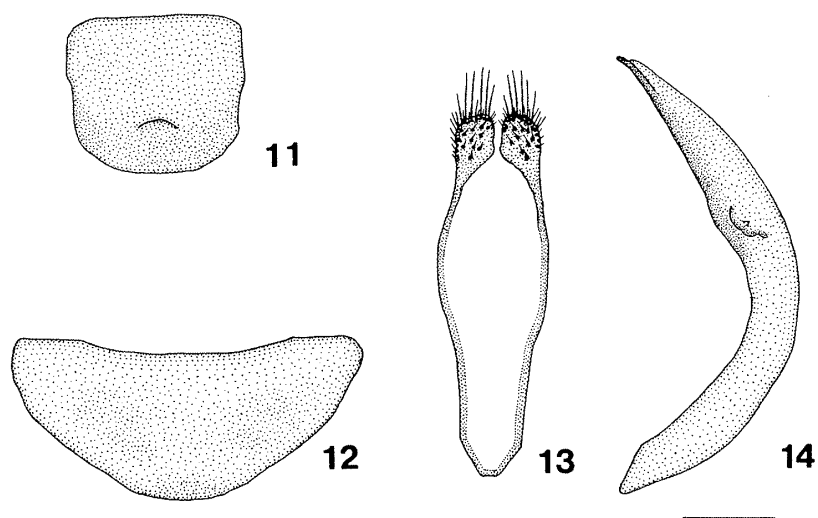
(Figs. 9–15)

Body small, relatively roundish, slightly tapering apically (male) or more robust (female) and furnished with pale fulvous pubescence.

Length: 6.1 mm (male), 6.7–6.1 mm (female); breadth: 1.7 mm (male), 2.0–1.7 mm (female).



Figs. 9–10. *Pidonia* (*Cryptopidonia*) *taipingshana* KUBOKI, sp. nov., from Mt. Tai-ping Shan in northeastern Taiwan. — 9, ♂; 10, ♀.



Figs. 11–14. *Pidonia* (*Cryptopidonia*) *taipingshana* KUBOKI, sp. nov., ♂. — 11, Last tergite; 12, last sternite; 13, lateral lobes of male genitalia, ventral view; 14, median lobe of the same, lateral view. Scale: 0.3 mm.

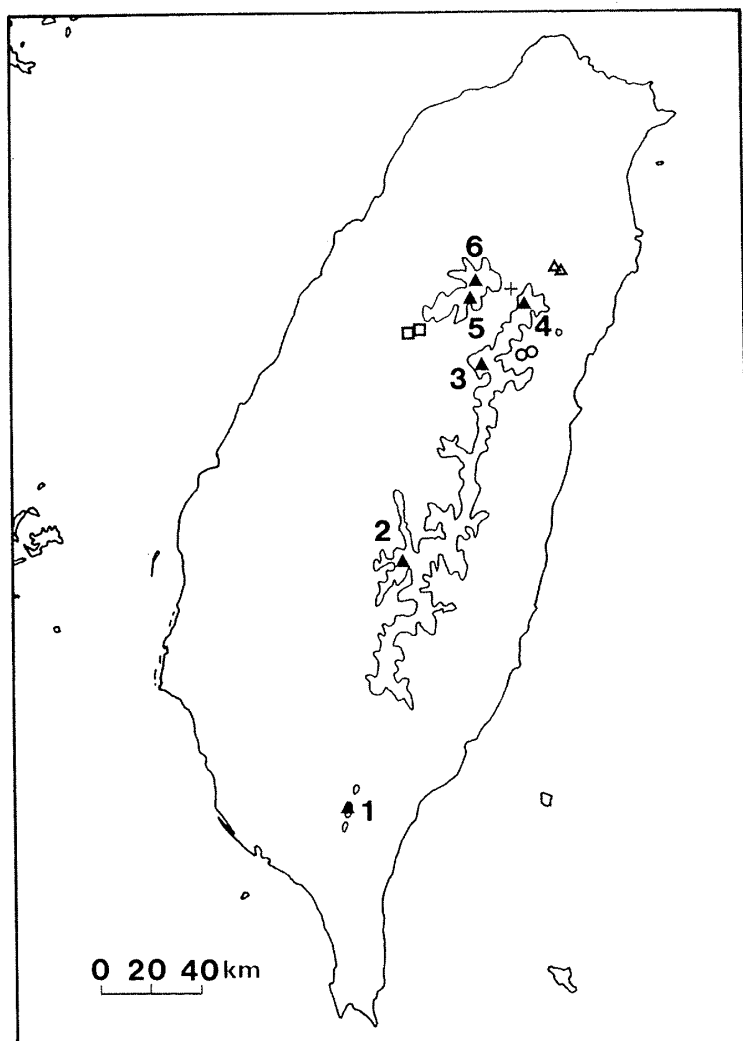


Fig. 15. Map showing the known localities of *Pidonia taipingshana* and relatives, *P. pilushana* and *P. anmashana* in Taiwan. Triangles: *P. taipingshana* KUBOKI, sp. nov. Circles: *P. pilushana* S. SAITO. Tetragons: *P. anmashana* KUBOKI. — 1, Mt. Pei-ta-wu Shan; 2, Mt. Yu Shan; 3, Mt. Ho-huan Shan; 4, Mt. Nan-hu-ta Shan; 5, Mt. Hsueh Shan; 6, Mt. Ta-pa-chien Shan. Line indicates the contour of 2,500m in altitude. Cross mark indicates the location of Si-yuan-ya-kou, on the borders between the Chung-yang Mountains and the Hsueh-shan Mountains.

Color. Male: — Body reddish yellow to black; head black; mouthparts yellowish brown except for dark brown apex of each mandible; eyes black; antennae entirely darkened; prothorax black; scutellum black; coxae, trochanters and femora yellowish brown; each apex of hind femora black; tibiae yellowish brown; tarsi and claws dark brown. Elytra almost black, with two pairs of arcuate fulvous markings and with a pair of brown humeral markings. Ventral surface: head black; gula yellowish brown; thoraces black; abdomen black; fourth to fifth sternites reddish brown.

Female: — Body coloration and markings distinctly developed in female than in male; head, prothorax and scutellum black; elytra black, with two pairs of arcuate whitish yellow markings; antennae and legs brown to black; coxae and trochanters yellowish brown. Ventral surface: head, thoraces and abdomen reddish brown; first to second sternites black.

Structure. Head broader across eyes than basal width of prothorax (male, 1.15:1; female, 1.07:1); terminal segment of maxillary palpus broadened apically with straight outer margin; temples well developed, slightly narrowed posteriorly in anterior half and abruptly constricted in posterior half, almost impunctate and shining, with several setae; frons subvertical and transverse, covered with coarse punctures, bearing a fine but distinct median longitudinal furrow extending backwards to vertex; vertex weakly convex above, coarsely punctate; gula shining, very sparsely clothed with long pubescence. Eyes relatively prominent, moderately faceted, shallowly emarginate at middle of internal margins. Antennae relatively short and slender, inserted just behind the level across frontal margins of eyes, slightly longer (male) or distinctly shorter (female) than body; 1st segment distinctly dilated towards apex, weakly shining, sparsely clothed with fine pubescence; 2nd to 11th segments densely clothed with fine appressed pubescence and sparsely with fine erect pubescence; comparative length of each antennal segment as follows: — $5 > 1 + 2 = 3 > 4 > 6$ (male) or $5 > 1 + 2 > 3 > 4 > 6$ (female).

Prothorax longer than basal width (male, 1.10:1; female, 1.11:1), shallowly constricted both behind apex and before base and roundly expanded laterally just before the middle; breadth across expanded portions slightly longer (male, 1.03:1) or distinctly shorter (female, 0.96:1) than base; basal margin weakly bisinuate, obviously broader than apical margin (male, 1.31:1; female, 1.34:1); pronotum convex above, finely and closely punctate and sparsely clothed with fine pubescence; posterior lateral setae long; prosternum shining, extremely thinly clothed with short pubescence; meso- and metasterna finely punctate, densely clothed with fine appressed pubescence. Scutellum small and triangular, slightly longer than broad and bearing thin pubescence on the surface. Elytra 2.38 times (male) or 2.27 times (female) as long as basal width, gradually narrowed posteriorly (male) or almost parallel-sided (female) and separately rounded at apices; surface sparsely and finely punctate, sparsely clothed with suberect pubescence; interspace between punctures broader than diameter of each puncture.

Legs relatively slender, finely punctate and clothed with short pubescence; femora clavate, with subappressed pubescence; hind femur not reaching elytral apex in both sexes; tibiae linear, with suberect pubescence; tarsi densely clothed with short pubescence on under surface; first segment of metatarsus longer than the following two taken together; third segment strongly dilated apically and deeply emarginate at middle of apex.

Abdomen elongate and gradually narrowed towards apex; surface of each sternite densely covered with extremely fine pubescence; in male, apex of last sternite round (Fig. 12), apex of last tergite round (Fig. 11); in female, last sternite semicircular, faintly projecting and truncate at apex, apex of last tergite subtruncate.

Male genitalia: — Median lobe long, relatively thick, weakly sclerotized, gradually sclerotized towards apex, strongly curved at basal third and acutely pointed at apex (Fig. 14); lateral lobes shorter than median lobe; each apex relatively long; apex of each lobe round, weakly subtruncate, densely furnished with long terminal hairs (Fig. 13); endophallus long and furnished with a pair of falcate sclerites; diverticulum long and slender.

Female genitalia: — Spermatheca minutely striated, lightly sclerotized, relatively swollen, strongly curved at middle, widest near middle, abruptly narrowed apically; the part continuing to spermathecal duct funnel-shaped, without transverse crease; spermathecal gland located at lateral wall; vagina enlarged basally; valvifer narrowed apically; apical segment of coxite expanded at inside, furnished with sensory pubescence; stylus large, ovate, strongly sclerotized and sharply enlarged apically, with sparse and long hairs at terminal area.

Type series. Holotype: ♀, Mt. Tai-ping Shan, 1,950 m alt., I-lan Hsien, 3-V-1989, M. KUBOKI leg.; Paratypes: 1 ♀, same data as for the holotype; 1 ♂, same locality, 3-V-1989, K. SUZUKI leg.; 1 ♀, same locality, 29-IV-1990, M. KUBOKI leg.; 1 ♀, same locality, 27-IV-1991, M. KUBOKI leg.; 2 ♀ ♀, same locality, 2-V-1992, M. KUBOKI leg.; 1 ♀, same locality, 3-V-1993, M. KUBOKI leg.

Distribution. Northeastern Taiwan.

Flight period. April to May.

Flower records. *Lithocarpus*, *Trochodendron aralioides*, *Acer*, *Styrax*.

Remarks. This new species is allied to *Pidonia pilushana* S. SAITO, but can be distinguished from the latter by the following key:

1. Antennae relatively long, distinctly extending beyond elytral apex by 10th segment in male, or reaching elytral apex by the apex of last segment; prothorax longer than basal width (male, 1.34 : 1; female, 1.06 : 1), breadth across expanded portions distinctly longer than base (male, 1.07 : 1) or as broad as base (female); apex of last sternite emarginate in male; each lobe of male lateral lobes round, obliquely subtruncate.
.....*P. pilushana* S. SAITO
2. Antennae relatively short, slightly extending beyond elytral apex by last segment in male, or reaching apical one-fourth of elytra by last segment in female; prothorax longer than basal width (male, 1.10 : 1; female, 1.11 : 1); breadth across expanded portions slightly longer than base (male, 1.03 : 1) or shorter than base (female, 0.96 : 1); apex of last sternite round in male; each lobe of male lateral lobes round, subtruncate at apex.

.....*P. taipingshana* sp. nov.

Vertical Distribution of *Pidonia taipingshana* and its Relatives, *P. pilushana* and *P. anmashana* in Connection with Vegetational Zonation in Taiwan

The distribution of *Pidonia taipingshana* and its relatives, *P. pilushana* and *P. anmashana* is shown in Fig. 15. *P. taipingshana* is distributed in the eastern part of the Chung-yang Mountain Range. Vertically, it occupies the montane evergreen needle-leaved forest zone. According to my investigation made at Pi-lu-Shen-mu, Hwalien Hsien, *P. pilushana* is vertically distributed from 2,100 m to 2,300 m in altitude. *P. taipingshana* is distributed in the northern end of the Chung-yang Mountain Range. At Mt. Tai-ping Shan, I-lan Hsien, *P. taipingshana* is vertically distributed from 1,800 m to 1,950 m in altitude. It habits the cool-temperate forest. *P. anmashana*, whose range is restricted to the southern part of the Hsueh-shan Mountain Range, vertically occupies the montane evergreen needle-leaved forest zone. At Mt. An-ma Shan (2,665 m in height), Tai-chung Hsien, *P. anmashana* is vertically distributed from 2,200 m to 2,300 m in altitude (KUBOKI, 1993b).

Three species of *Pidonia pilushana*, *P. anmashana* and *P. taipingshana* form a species-group of the subgenus *Cryptopidonia*, mainly characterized by the following combination of morphological features: antennae short; ventral surface of abdomen bi-colored, black and reddish brown in female; median lobe of male genitalia more and less thick; apical segment of coxite of female genitalia expanded at inside; stylus of female genitalia ovate, sharply enlarged apically. This species-group of Taiwan may be related to the group of *P. oyamae*, *P. chujoi* and *P. fujisana* mainly occurring in the *Fagus* forest of the Japanese Islands.

The distributional ranges of three closely related species are separated by the chain of mountain peaks and deep valleys in Taiwan. For instance, Mt. Nan-hu-ta Shan (3,740 m in height) and Mt. Ho-huan Shan (3,416 m in height) are situated between the distributional ranges of *P. pilushana* and *P. taipingshana*. The differentiation of three related species may arise after geographic separation as part of the speciation process.

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A New Name of *Eumerus ehimensis* SHIRAKI et EDASHIGE, 1968 (Diptera, Syrphidae)

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Key Words: Diptera; Syrphidae; *Eumerus*; New name; Japan.

Eumerus ehimensis SHIRAKI et EDASHIGE, 1968 is a junior homonym of *Eumerus ehimensis* SHIRAKI et EDASHIGE, 1953. Both species, described by the same authors, are quite different in the form and color of markings on abdominal tergites. The former is similar to *Eumerus strigatus* (FALLÉN), and the latter to *Eumerus japonicus* MATSUMURA. I propose *Eumerus shirakii* nom. nov. for *Eumerus ehimensis* SHIRAKI et EDASHIGE, 1968 (*nec* 1953).

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